

REMARKS

This application has been amended to place it in condition for allowance at the time of the next Official Action.

Claims 1 and 4-10 are pending in the present application. Claim 1 has been amended to incorporate the recitations of claim 3. Claim 3 has been canceled. Claims 7-10 have been added. Support for new claims 7-10 may be found at page 11, lines 14-26.

In the outstanding Official Action, claims 1, 4, and 5 were rejected under 35 USC §102(b) as allegedly being anticipated by KAISAKI et al. Claims 3 and 6 were rejected under 35 USC §103(a) as allegedly being unpatentable over KAISAKI et al. Applicants respectfully traverse that rejection.

As noted above, the recitations of claim 3 have been incorporated into independent claim 1. Accordingly, the present amendment obviates the anticipation rejection.

As to the obviousness rejection, KAISAKI discloses a working liquid combined with an abrasive article for chemical mechanical polishing. KAISAKI discloses numerous possible components for the working liquid, and one example comprising a chelating agent, oxidizing agent, and passivating agent (column 15, lines 38-40). KAISAKI et al. further teach inorganic particulates, such as the recited silica, may be added. As to the particular chelating agent, KAISAKI et al. disclose an extensive list of possible chelating agents, which includes the

recited 1,3-diketones (column 14, lines 11-16). As to the particular passivating agent, KAISAKI discloses several possible passivating agents, including the recited benzotriazole (column 14, line 63 to column 15, line 14).

Thus, KAISAKI clearly does not disclose or suggest the specific combination of 1,3-diketones in combination with benzotriazole. In fact, the 1,3-diketones and benzotriazole are not even related to each other in the disclosure of KAISAKI. Rather, one of ordinary skill in the art would have had to selectively pick and choose a particular type of chelating agent, 1,3-diketones, and a particular passivating agent, benzotriazole, from an extensive number of possible combinations without any guidance from the disclosure of KAISAKI, in order to approach the claimed invention.

Thus, one skilled in the art would lack the motivation to combine and modify the publication to obtain the claimed invention.

Additionally, KAISAKI teaches a specific abrasive article to which three-dimensional abrasive composites are fixed is essential for chemical mechanical polishing. On the other hand, the specific abrasive article is not necessary for the present invention. Without using the specific abrasive article, the present invention can reduce the occurrence of dishing.

KAISAKI discloses a working liquid combined with the abrasive article for chemical mechanical polishing and teaches

that inorganic particles such as silica may be added to the working liquid. KAISAKI also discloses that the preferred working liquid is substantially free of inorganic particulates, and further discloses that the working liquid preferably contains inorganic particulates that are less than 1% by weight of the working liquid, more preferably less than 0.1% by weight and most preferably 0% (column 15, lines 31-37). In KAISAKI, inorganic particulates that are contained in the working liquid are not required for chemical mechanical polishing. On the other hand, inorganic particulates such as silica polishing material are recited components of the claimed invention.

Thus, the claimed invention is distinct from the conceptual design of polishing as taught by KAISAKI.

KAISAKI also fails to teach or suggest the unexpected results exhibited by the claimed invention when a benzotriazole-based compound is combined with one of the diketones as recited in the claimed invention. The claimed invention can reduce the occurrence of dishing, because the polishing rate of copper is adequately lowered and the polishing rate of tantalum (barrier metal) is maintained, that is, the ratio of the polishing rate of copper to that of the tantalum (Cu polishing rate/Ta polishing rate) is about 1 or less than 1. In fact, in Table 1 of the present specification, the Cu polishing rate of slurries No. 1 to 4 (benzotriazole-based compound in combination with diketone) is lower than the rates of the other slurries. The Ta polishing

rates of slurries No. 1 to 4 are nearly the same as the rate of slurry No. 5 (benzotriazole only). On the contrary, KAISAKI discloses that the oxidation and dissolution of copper metal can be enhanced by the addition of agents for copper (column 13, lines 57-63). Accordingly, a person skilled in the art would not have the expected results shown in Table 1.

Accordingly, applicants believe that a person skilled in the art would lack the motivation to combine a benzotriazole-based compound with one of the diketones so as to obtain the claimed invention.

As a result, applicants respectfully request that the rejection be withdrawn.

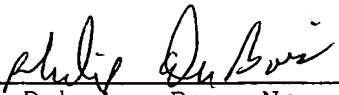
In view of the present amendment and the foregoing remarks, applicants believe that the present application is in condition for allowance at the time of the next Official Action. Allowance and passage to issue on that basis is respectfully requested.

The Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any

overpayment to Deposit Account No. 25-0120 for any additional  
fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17.

Respectfully submitted,

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